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CONTRIBUTIONS FROM THE CRYPTOGAMIC LABORATORY OF  
HARVARD UNIVERSITY. — XLVII.

*PRELIMINARY DIAGNOSES OF NEW SPECIES OF  
LABOULBENIACEAE. — IV.*

BY ROLAND THAXTER.

**MARINE BIOLOGICAL LABORATORY.**

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ADDITIONAL material illustrating the well-marked generic type described in a former paper as *Monoicomyces* renders necessary some modification of the original diagnosis, as well as the separation of several species in a second nearly allied genus, which I have called *Eumonoicomyces* (*E. Papuanus* being taken as the type), that is well characterized not only by constant differences in the structure of the peculiar antheridium, but also by reason of certain differences in gross habit which are constant in normal forms of all three of the known species, one of which, *E. invisibilis*, was formerly placed by me in *Monoicomyces*.

EUMONOICOMYCES nov. gen.

Receptacle consisting of a basal and subbasal cell ; the latter producing terminally a sterile appendage and laterally a fertile branch (abnormally more than one) the axis of which is coincident with that of the receptacle from which it is not distinguished and consists of a series of superposed cells which may bear a sterile appendage, an antheridium, or an antheridium and a perithecium ; the three terminal cells usually bearing these organs in the order mentioned. The antheridia consisting of a single stalk-cell, and a single, often obscure, basal cell ; the body of the antheridium consisting of a series of numerous antheridial cells in four (?) vertical rows which extend obliquely inward and upward, emptying into a common cavity, and replace entirely the two tiers of wall-cells and the antheridia of *Monoicomyces* ; the terminal cells growing upward directly to form four unequal sterile terminal appendages, similar to those of *Monoicomyces*.

*Eumonoicomycetes Papuanus* nov. sp.

Nearly or quite hyaline. Basal cell of the receptacle small, usually triangular; the subbasal cell terminating in a short appendage, distinguished by a dark basal septum, and sometimes once branched. The fertile branch not differentiated from the receptacle, consisting of three, rarely two cells similar to the subbasal cell, obliquely superposed; the lowest bearing normally a short, hyaline or faintly brownish, erect, sterile appendage, similar to that of the subbasal cell; the middle cell bearing a single antheridium, and the upper an antheridium and a stalked perithecium. The antheridia rather stout, broader distally; the stalk-cell small and short; the antheridial cells very numerous — thirteen to fifteen usually visible in optical section — the terminal appendages of the usual type, short or seldom longer than the antheridium. Perithecium rather long and sometimes slender; the venter inflated; the distal portion tapering gradually and symmetrically to the blunt, nearly truncate apex; the rather short tip hardly distinguished above a slight elevation; the stalk-cell variable in length, rather slender, seldom more than half as long as the perithecium; the basal cells rather large and broad, not distinguished from the venter. Spores about  $35 \times 3 \mu$ . Perithecia  $80-120 \times 32-40 \mu$ , the stalk-cell  $35-75 \times 15 \mu$ . Antheridia including stalk-cell and without appendages  $35 \times 18 \mu$ . Total length to tip of perithecium  $150-290 \mu$ .

On all parts of a small pale species of *Oxytelus*. Ralum, New Pomerania. Berlin Museum, No. 1011.

*Eumonoicomycetes Californicus* nov. sp.

Resembling *E. Papuanus* in general habit. Basal cell of the receptacle short, stout, geniculate, with a dark brown suffusion extending from the foot half-way up its convex margin; the subbasal cell bearing distally a long appendage consisting of a short hyaline basal cell, separated by a dark septum from a second cell above it, which is dark brown and bears two long, slender, one-celled, erect branches, brown below, becoming hyaline distally. The fertile branch not distinguished from the receptacle and consisting of three, sometimes more, very obliquely superposed cells similar to the subbasal cell: the lowest bearing a sterile appendage like that which terminates the receptacle; the middle cell usually bearing an antheridium, and the upper an antheridium and a perithecium. Antheridium short-stalked, with a more or less well-defined median constriction, resulting from an inflation of the cells which bear the terminal append-

ages. The latter very long, brown, extending beyond the tip of the perithecium. Perithecium short and stout, the venter inflated, the much shorter neck-like distal portion abruptly distinguished, the apex blunt, the stalk-cell usually rather short and stout. Perithecia  $75 \times 25 \mu$ , the stalk-cell  $20 \times 18 \mu$ . Sterile appendages, longest  $150 \mu$ . Appendages of antheridium  $100 \mu$ . Total length to tip of perithecium  $150 \mu$ .

On *Oxytelus* sp. Berkeley, California.

#### MONOICOMYCES Thaxter.

The characters which may be considered to separate this genus from *Eumonoicomyces* are as follows: — The stalk of the antheridium consists of two cells placed side by side; the body of the antheridium consists of two tiers of wall-cells, from each of which an inner antheridial cell is separated; the subbasal cell of the receptacle bears normally more than one heterogeneous fertile branch.

#### *Monoicomyces Echidnoglossae* nov. sp.

Subbasal cell of the receptacle somewhat smaller than the basal cell, bearing a terminal appendage the basal cell of which is as long, or nearly as long as the receptacle and often distally enlarged; the axis above it consisting of a curved series of several cells, externally opaque, black, hyaline along the inner margin, each cell giving rise from its inner side to a hyaline simple branchlet, much as in the appendage of *Laboulbenia cristata*. Fertile branches usually two, sometimes one or three, arising from the subbasal cell of the receptacle, and consisting of a single short basal cell which bears directly a perithecium (in some cases more than one) and an antheridium. Antheridium relatively large, the stalk-cells somewhat longer and narrower than the basal cells; the cells of each of the middle tiers distally more or less prominent, the rounded, almost papillate elevations thus formed from the upper tier more prominent than those from the lower tier: the distal cells proliferous externally and distally, thus forming an outer crown of shorter appendages of very unequal length, which surround the usual inner series. Perithecium becoming greatly and asymmetrically inflated below, and tapering rather abruptly to the slightly distinguished, rather short, bluntly pointed tip; the stalk-cell variably developed. Perithecia  $100-125 \times 45-55 \mu$ , the stalk-cells  $40-80 \times 15 \mu$ . Antheridia  $75-100 \mu$ , the sterile appendages  $50-75 \mu$ . Total length to tip of perithecium  $220-250 \mu$ .

On the inferior surface of the thorax of *Echidnoglossa Americana* Faavel. Vera Pass, Colorado. Leconte Collection.

*Monoicomyces furcillatus* nov. sp.

Receptacle consisting of two small cells which are hardly distinguishable owing to a general blackish brown suffusion; producing on either side a stout blackened prolongation, the two forming a nearly symmetrical fork-like structure, the prongs of which are slightly curved inward, and slightly divergent. From near the base of these outgrowths and between them arise, apparently from single basal cells on both sides, single stalked perithecia and antheridia. The antheridia rather long and slender, their detailed structure not determinable in the types. The perithecia long and slender, straight, symmetrical, pale yellowish, slightly inflated toward the base, tapering gradually to the blunt apex. Spores about  $40 \times 3 \mu$ . Perithecia  $135 \times 27 \mu$ . Outgrowths from the receptacle  $110 \times 12 \mu$ .

Near the tip of the abdomen of *Aleochara repetita* Sharp. Panama. Sharp Collection, No. 1095. Of the three individuals obtained one only is in fair condition, and none have antheridia in which the details of structure can be made out. Owing to the suffusion and great reduction of the receptacle it is further impossible to determine the exact origin of the remarkable fork-like outgrowths, or the other structures which arise from it. The form is a most peculiar one and recognizable without difficulty; yet, until further data are obtained concerning it, its generic position cannot be certainly determined, although it seems at least more closely allied to *Monoicomyces*, in which it is provisionally placed, than to any other known type.

*Monoicomyces Aleocharae* nov. sp.

Pale amber, shading to amber brown. Receptacle, together with the foot and the basal cell of the terminal appendage, forming a heart-shaped body, blackened below, bearing terminally a median, rigid, slender, almost wholly opaque, black branch, abruptly distinguished from its broad basal cell: the subbasal cell of the receptacle small, triangular when viewed sidewise, giving rise to two fertile branches, the short small basal cells of which give rise at once each to two secondary branches and an antheridium; the branchlets proliferous and forming an axis of usually three cells, the lower bearing an antheridium, and each of the two upper an antheridium and a perithecium; there being thus sixteen antheridia and eight perithecia, in fully and symmetrically developed specimens, which form a dense, spreading, fan-like tuft, the antheridia being in general posterior in position, overlapping one another between the black sterile

appendage and the perithecia. Antheridium distally broadened and truncate, elongate; the stalk-cells about equal and about one half the length of the body of the antheridium or somewhat longer than this; the basal cells unequal; the cells of the two middle tiers, and their antheridia, clearly distinguishable; the terminal cells forming four unequal, rounded prominences, the upper inner angle of each cell separated by an almost vertical septum to form the four "guard cells," that terminate in papillate prominences just below which they proliferate to form the characteristic, erect, sterile appendages, all four of which do not always develop; the sterile appendages relatively short, two to three-septate, tapering to a blunt point, distinctly inflated above the slightly constricted base. Perithecium relatively large, straight or slightly curved, somewhat inflated below, tapering gradually to the rather short, moderately well distinguished tip; the apex bluntly rounded, the basal cells relatively small; the stalk-cell variably developed, its distal end usually somewhat broader than the basal cells collectively, sometimes more than half as long as the body of the perithecium. Spores about  $50-55 \times 4-5 \mu$ . Perithecia  $130-185 \times 35-55 \mu$ , the stalk-cell  $35-100 \times 18-25 \mu$ . Antheridia  $70-75 \times 22 \mu$ , its appendages  $45-50 \mu$ . Receptacle about  $35 \times 28 \mu$ . Greatest general length and width of largest individual  $350 \times 300 \mu$ .

On *Aleochara rufipes* Boh. Derema, Usambara, East Africa. Berlin Museum, Nos. 844 and 845.

### EUHAPLOMYCES nov. gen.

Receptacle consisting of two cells, the upper bearing a free stalked antheridium and a stalked perithecium. Antheridium conical, consisting of a single stalk-cell followed by a basal cell from which is separated a group of smaller cells some of which (two or four?) extend upward and inward to form antheridial cells: above these follow three external marginal cells, the lowest of which lies beside the antheridial cells; the uppermost succeeded by a conical chamber terminating in a pore, and extending downward along the inner sides of the marginal cells to form a cavity into which the antheridial cells empty. Perithecium resembling that of *Haplomyces* and having two ascogenic cells.

### *Euhaplomyces Ancyrophori* nov. sp.

Receptacle small, the basal cell somewhat longer, nearly hyaline, tapering to the relatively small foot; the subbasal cell becoming pale amber brown. Antheridium, including its short stalk-cell, about as long

as the receptacle, becoming pale amber brown, tapering to a pointed apex. Perithecium becoming pale amber brown, relatively large, thick walled, considerably and abruptly inflated above the basal cells, somewhat asymmetrical, tapering rather evenly to the blunt apex; the stalk-cell long, thick walled, slightly curved, nearly hyaline, distally somewhat broader, not distinguished from the basal cells. Spores about  $40-45 \times 3.5 \mu$ . Perithecia  $180-200 \times 72-82 \mu$ ; the stalk-cell  $110-120 \times 28-30 \mu$ . Antheridium including the stalk-cell  $55-65 \mu$ . Total length to tip of perithecium  $360 \mu$ .

On the superior surface of the abdomen of *Ancyrophorus aureus*. Dumfriesshire, Scotland. Sharp Collection, No. 1091.

#### *Eucantharomyces Xanthophaeae* nov. sp.

Perithecium (not fully mature) straw colored, somewhat asymmetrical, almost symmetrically and but slightly inflated from base to apex; the tip short, well distinguished; the lip-cells rounded, and slightly inflated, forming a knob-like termination, one of them protruding in the form of a slight tongue-like projection beyond the others: the stalk-cell about as long as the receptacle, from which it projects at an angle, being moreover turned at the same time a little to one side. The cells of the receptacle subequal, lying side by side, the basal one extending to the base of the stalk-cell of the perithecium, with which it is in contact. Appendage relatively large, the stalk-cell subtriangular, somewhat larger than the basal cell which is wholly overlapped externally by the well defined and distally somewhat inflated marginal cell; the antheridial cells in four tiers of seven, six, five and four cells respectively; the discharge-tube long and curved outward. Spores about  $36 \times 4 \mu$ . Perithecia  $165 \times 50 \mu$ , the stalk-cell  $46 \times 20 \mu$ . The appendage to tip of discharge tube  $120 \mu$ , the antheridium proper  $55 \times 30 \mu$ . Total length to tip of perithecium  $290 \mu$ .

On the right inferior margin of the prothorax of *Xanthophaea vittata* Dej., Australia. Berlin Museum, No. 973.

#### *Dichomyces bifidus* nov. sp.

Basal cell slightly enlarged, pellucid, tinged with brown, about as long as broad: the lower tier, and more or less of the middle tier, opaque; the marginal cells of the latter forming a bluntly rounded, sometimes almost obsolete projection on either side, hardly extending above the

venter of the short, stout, short-necked antheridia: the upper tier relatively large, more or less crescent-shaped according to the degree of lateral development, edged externally with blackish brown, more broadly below, the brown area punctate; the cells about thirty-one in the larger individuals, the marginal ones forming a rather slender series, which may curve abruptly upward nearly to the middle of the perithecia, or assume a more divergent habit; the perithecigerous area horizontal, producing normally four perithecia, three appendages arising between the two middle ones and one between each of the others, the external cells bearing appendages as usual which vary in length. Perithecia rather long and slender, hyaline or faintly yellowish brown, conspicuously tinged with purplish brown below the perfectly hyaline tip, the anterior lip-cells forming a pointed projection, the posterior ones forming each a relatively large ear-like appendage which tapers to a pointed apex, and is slightly curved, the two diverging from one another at an angle of about  $50^\circ$ . Spores about  $38 \times 2.5 \mu$ . Perithecium without appendages  $126 \times 25 \mu$ ; the appendages  $14 \mu$ . Receptacle  $220-350 \times 120-165 \mu$ . Total length to tip of perithecium  $300-330 \mu$ . Appendages  $20-80 \mu$ .

On the abdomen of (?) *Philonthus* sp. Ralum, New Pomerania. Berlin Museum, No. 1013.

#### *Dichomyces Belonuchi* nov. sp.

Receptacle relatively large and long: the distal tier relatively small, consisting of from eleven to thirteen short cells, slightly suffused, the median cells little longer than the rest, the series forming slight, rounded, sometimes almost obsolete lateral projections on either side of the perithecia: the basal cell small, partly transparent: the lower and middle tiers not distinguished, uniformly opaque; a portion of the middle cell, and sometimes the tips of other cells in the middle tier, more or less translucent, the marginal cells ending in a slight rounded prominence below the base of the antheridium. Perithecia normally two, evenly suffused with pale reddish brown, rather long and slender, tapering throughout, the conformation of the lip-cells much as in *D. furciferus*. Spores about  $30 \times 3 \mu$ . Perithecia  $75-80 \times 18-20 \mu$ . Receptacle  $108-126 \times 54-58 \mu$ . Total length to tips of perithecia  $185-200 \mu$ .

On the abdomen of *Belonuchus fuscipes* Fauvel. New Guinea. Sharp collection, No. 1090.

*Dichomyces Australiensis* nov. sp.

Receptacle usually rather long and narrow, the basal cell relatively large, hyaline or slightly suffused; the margins of the lower tier usually continuous with those of the middle one, the marginal cells deep blackish brown or quite opaque, the middle cell hyaline or translucent throughout, its lower third often punctate: the middle tier consisting of about nine cells, slightly suffused with pale reddish brown externally, more or less edged with deep blackish brown; the terminal cells forming a free rounded projection on either side, extending as high as about the middle of the rather large antheridia, the tips of which may reach to the bases of the perithecia: the upper tier nearly hyaline, consisting normally of from eleven to thirteen subequal cells, the terminal ones extending but slightly higher than the bases of the perithecia, which are normally two in number, rather deeply suffused with purplish brown throughout; the apex hyaline, the posterior lip-cells producing each a relatively large bluntly pointed appendage, the two diverging nearly at right angles to the axis of the perithecium, becoming slightly recurved, the distance from tip to tip about twice the diameter of the perithecium. Appendages nearly as long as the perithecia. Perithecium  $60-70 \times 16-20 \mu$ , its appendages  $18 \mu$ . Receptacle  $90-100 \times 42-48 \mu$ . Total length to tip of perithecium  $160-170 \mu$ .

On the superior surface of the abdomen of *Quedius ruficollis* Grav. Sharp Collection, No. 1102.

*Dichomyces Mexicanus* nov. sp.

General habit much like that of *D. princeps*, generally rather long and slender. Basal cell hyaline, the lower tier relatively long and narrow, broadly edged externally with black; the median cell hyaline, or only the marginal cells slightly suffused with smoky brown: the middle tier distinguished from the lower by a slight prominence, hyaline, seven to nine celled; the marginal cells protruding but slightly on either side; the antheridia brownish, short, stout, blunt pointed: the upper tier relatively very long, sometimes twice as long as the middle tier, consisting of from nine to eleven cells; the marginal cells protruding but slightly on either side, very much as in the middle tier. Perithecia normally two, about as long as the distal tier and concolorous with it, or somewhat darker, rather stout, tapering but slightly; the tip rather abruptly distinguished, broadly truncate with a slight median projection; the posterior lip-cells giving rise each to a long horizontal appendage, which becomes recurved,

is bluntly pointed and somewhat narrower toward the base, the distance from tip to tip often twice the diameter of the perithecium. In a few specimens the receptacle and perithecia are somewhat evenly suffused with smoky brown. Perithecia  $75-85 \times 25-30 \mu$ , the appendages  $18-22 \mu$ . Receptacle  $165-200 \times 55-70 \mu$ . Total length  $235-275 \mu$ .

On the inferior surface of the abdomen of *Philonthus atriceps* Sharp. Jalapa, Mexico. Sharp Collection, No. 1112. Specimens, apparently normal, sometimes occur in which the tips of the perithecia are blunt and unmodified.

### *Dichomyces Homalotae* nov. sp.

Form short and stout. Basal cell geniculate, more or less suffused: the lower tier more or less, sometimes wholly, suffused with reddish brown; the margins darker, more or less translucent, without contrasts, the outline somewhat uneven, the transition to the middle tier indicated by a distinct prominence: the middle tier consisting of from nine to (rarely) thirteen cells, hyaline or subhyaline, with slight lateral suffusions; the marginal cells ending in a slight hyaline rounded projection, seldom extending higher than the venter of the somewhat suffused curved antheridia: the upper tier relatively small, the cells subequal, hyaline, asymmetrical, owing to the development of but one perithecium; the appendages often equalling, or exceeding the perithecium in length. Perithecium characteristically short and stout, inflated below, sometimes oval, tapering somewhat abruptly distally, to the rather broadly truncate, or slightly rounded unmodified apex. Spores  $33 \times 3 \mu$ . Perithecia  $65-75 \times 25-30 \mu$ . Receptacle  $70-90 \times 40-55 \mu$ . Total length  $125-165 \mu$ .

On all parts of *Homalota sordida* Marsh. Fresh Pond, Cambridge. First observed by Mr. Bullard.

### *Peyritschiella Xanthopygi* nov. sp.

Basal cell of the receptacle very small, or hardly distinguished from the foot: the first tier consisting of three subequal cells without appendages, the middle one somewhat shorter than those on either side of it: the second tier asymmetrical, consisting of three subequal median cells, the margins of the two outer free below for nearly half their length and coincident with the margins of the tier below, the appendiculate "marginal" cells, about three to five on either side, separated from them as usual by oblique septa; the first on the right bearing the large, slender, pointed, nearly straight purplish antheridium: the upper tier consisting

of about fifteen or more cells, the series distally concave, rising abruptly upward on either side above the base of the perithecium and bearing the usual appendages. Perithecium solitary at the right of the median (primary) appendage, almost symmetrically inflated from base to apex, dull purplish; the tip slightly darker, hardly distinguished; the apex truncate, sometimes slightly spreading; the lip-cells hardly projecting. Perithecia  $115-150 \times 34-42 \mu$ . Receptacle  $200 \times 65-70 \mu$ . Total length to tip of perithecium  $310-360 \mu$ .

On the abdomen of *Xanthopygus Solskyi* Sharp. Sharp Collection, No. 1158. Nearly allied to *P. Amazonica*, from which it differs principally in the form of the perithecium.

#### *Chitonomyces occultus* nov. sp.

Short and stout, becoming suffused with somewhat smoky amber brown. Lower portion of the receptacle deeper brown, the basal cell relatively large, broad distally; the subbasal cell broad and flattened; the lower cell of the distal portion rather large and but slightly overlapped by the subterminal cell, which may bulge slightly below the terminal cell, the latter being thus turned so as slightly to overlap the perithecium. Perithecium short and stout, its upper third or less free, darker brownish externally; the tip bent outward, tapering rather abruptly to the slightly irregular apex, its outer half or less suffused with dark brown. Spores about  $22 \times 2.5 \mu$ . Perithecium  $60 \times 20 \mu$ . Receptacle to tip of distal cell  $90 \mu$ . Total length to tip of perithecium  $100 \mu$ .

In the median marginal depression of the right elytron of *Cnemidotus* sp. Lake Eustis, Florida.

#### *Chitonomyces psittacopsis* nov. sp.

Nearly hyaline. Receptacle rather slender, the basal cell several times as long as the squarish subbasal cell; the cell above the latter nearly equalling it in size and separated by an oblique septum from the lowest of the marginal cells, which are all subequal; the terminal appendiculate cell of the usual form, relatively large and long, without any distinct basal enlargement; the tip of the lower appendiculate cell curved slightly outward. Perithecium relatively very large, long, slender, usually curved sidewise throughout, the upper half tapering very slightly to the curiously modified, clear black contrasting tip, which resembles the partly open beak of a parrot; a larger upper recurved mandible-like pro-

cess being separated from a second, that resembles a lower mandible, by a hyaline area which includes, and extends back from, the pore; the lower lip-cells translucent, but suffused with brown in such a way as to suggest a tongue-like process projecting slightly between the "mandibles." Spores very numerous, completely filling the cavity of the perithecium, greatly attenuated,  $85 \times 2.5 \mu$ . Perithecium  $200 \times 30 \mu$ . Receptacle to tip of distal cell  $140 \mu$ . Total length to tip of perithecium  $290-300 \mu$ .

On the posterior legs of *Laccophilus* sp. Lake Eustis, Florida.

### *Chitonomyces Bullardi* nov. sp.

Straw colored becoming tinged with pale amber brown. Basal cell of the receptacle monstrously developed, about as long, sometimes twice as long, as the remainder of the plant, its axis coincident with that of a distal, variably developed, blunt, tooth-like, free posterior projection, near the base of which the subbasal cell and the remainder of the plant project backward at an angle of about  $45^\circ$ , or less, to the axis of the basal cell, the separating septum being vertical or nearly so; the subbasal cell small and flattened: the lower marginal cell of the distal portion of the receptacle subtriangular, short and broad; the lower appendiculate cell above it relatively large; the subterminal cell larger than the lower marginal cell, curved inward so that the terminal appendiculate cell projects from it obliquely inward against the perithecium. Perithecium four fifths or more free, relatively large and stout, distinctly inflated below, tapering to the tip, which is characteristically modified through the presence of a large claw-like subterminal dark amber brown external projection, the distal half of which is somewhat abruptly recurved, like the upper mandible of a parrot, over the small hyaline incurved 4-papillate apex, which is immediately subtended on the inner side by a small, erect, dark amber brown, tooth-like process, the blunt tip of which alone is free. Appendages slender and extending to or beyond the tip of the perithecium. Spores about  $20 \times 2.5 \mu$ . Perithecium average  $70-75 \times 30-32 \mu$  not including the hook-like appendage, which is  $25 \mu$  to its upper margin. Receptacle: basal cell to tip of prolongation  $90-220 \times 15-22 \mu$ , the portion above to tip of distal cell  $48 \mu$ .

On the right inferior anterior margin of the prothorax of *Cnemidotus* 12-*punctatus* Say. Glacialis Pond, Cambridge. The most singular species of the genus, discovered by Mr. Charles Bullard, to whom I take pleasure in dedicating the species.

*Chitonomyces Hydropori* nov. sp.

Receptacle nearly hyaline, the subbasal cell flattened, many times smaller than the basal cell, slightly inflated and distinguished from the cells above and below by slight constrictions; the two cells above subequal, the posterior somewhat broader, and separated from the lower marginal cell of the distal portion by an oblique curved septum, which overlaps its upper fourth; the subterminal marginal cell often nearly as long as the lower, the narrow upper half or more of which it overlaps. The lower appendiculate cell rather small, the upper terminal one of the typical form, relatively rather long, distinguished by a slight constriction, the appendage extending beyond the tip of the perithecium. Perithecium relatively large, its upper half or more free, distally broader, the outer margin nearly straight with a slight subterminal rounded elevation below the abruptly rounded projecting outer brownish lip-cells; the apex otherwise flat, broad, bent outward so as to be slightly oblique, the inner margin below it bulging and curved throughout. Spores  $55 \times 4 \mu$ . Perithecium  $98-108 \times 25 \mu$ . Receptacle to base of perithecium  $80 \mu$ , to tip of terminal cell  $150 \mu$ . Total length to tip of perithecium  $185 \mu$ .

On the mid-elytron of *Hydroporus modestus* Aubé. Cape Neddock, Maine. Mr. Bullard.

*Chitonomyces Orectogyri* nov. sp.

Dull purplish, the cells thick walled and marked by faint transverse striations. The basal cell of the receptacle very small and hardly distinguishable, owing to an abrupt curvature just above the foot; the subbasal cell relatively large, distally narrowed, nearly the whole upper half of its posterior margin covered by a relatively large triangular cell, from which it is separated by a nearly vertical septum; this triangular cell is in contact distally with the ascigerous cavity and the base of the lowest marginal cell; the latter is very long, extending upward, its narrow extremity ending without enlargement opposite the blackened base of the inner appendage, lying between the latter and the tip of the perithecium; the lower appendiculate cell well defined, about two thirds as long as the subterminal cell, which projects slightly above and bears the free terminal appendiculate cell, which is hyaline, about equal to the lower in length, its inner margin nearly straight, its outer margin curved abruptly inward to the base of the obliquely distinguished, blackened, narrow, erect terminal portion, from which the appendage has been broken in the types. Perithecium relatively large, of nearly equal diameter throughout; the

tip broad with a bluntly rounded apex; a short erect contrasting brown prominence formed by the left posterior lip-cell, toward the base of which the inner (anterior) lip-cells are curved in a characteristic fashion, so as partly to overlap it. Spores about  $75 \times 5 \mu$ . Perithecium  $125 \times 36 \mu$ . Receptacle  $250-270 \mu$ . Total length to tip of perithecium  $255 \mu$ .

On the superior surface of the tip of the abdomen of *Orectogyrus specularis* Aubé. Africa. Berlin Museum, No. 806.

### DIOICOMYCES nov. gen.

*Male individual* consisting of four superposed cells, the upper of which is a simple antheridium bearing a subterminal discharge tube.

*Female individual*. Receptacle ending distally in a peculiarly modified sterile cell, corresponding to the upper spore-segment: the subbasal cell producing a single perithecium laterally, and separated from the sterile terminal cell by a second small cell. Perithecium free, stalked; the ascogenic cell single, the spores more or less obliquely once-septate, and of two kinds corresponding to the sexes.

*Dioicomycetes Floridanus*, formerly referred provisionally to *Amorphomyces*, must be transferred to this genus; since, although the male is unknown, the female has the typical characters which distinguish the genus very clearly from its near ally. *D. obliqueseptatus* on *Myrmedonia* (?) sp. must also be removed from *Amorphomyces*, on account of its obliquely septate spores, and should with little doubt be included in the present genus; although it is evident, from comparison with abundant material of the species described below, that the specimens, both females, from which the original description was made, are more imperfect than was at first supposed, and should not have been used as types. The peculiar sterile cell is present in neither of these; but, since they correspond in all other respects to the generic type, may be assumed to have been broken off. No free spores are available in either, although an examination of the spore mass within the ascus seems to show that they present the same variation in size which characterizes the species described below.

### Dioicomycetes Anthici nov. sp.

*Male individual*. Form slender, of nearly the same diameter throughout, the basal cell half the total length of the individual to the tip of the discharge tube; the third cell nearly square, the subbasal about as large as the terminal antheridial cell, which ends in a distal blunt projection; the discharge-tube arising laterally below the tip, projecting upward from

a broadened base, slightly divergent from the main axis, slender, about as long, or a little longer than, the body of the antheridial cell. Length to tip of antheridial cell, including foot,  $50\mu$ : to tip of discharge-tube  $60\mu$ . Width  $8\mu$ .

*Female individual.* Often more or less strongly curved, the terminal sterile cell bluntly pointed, slightly curved, brownish; the basal cell becoming narrower below, the upper septum convex; tinged with brown posteriorly as is the rest of the receptacle: the subbasal cell very small, subtriangular; separated from the terminal sterile cell by a somewhat smaller triangular cell. Stalk-cell of the perithecium hyaline, long, often about the same diameter throughout; the thick wall becoming gradually thicker distally: the perithecium slightly inflated, faintly brownish; the short, stout, broad, blunt tip slightly distinguished, and nearly symmetrical; the lip-cells forming an unbroken outline, without protrusions. Spores (male)  $40 \times 4\mu$ , (female)  $60 \times 6\mu$ . Perithecium  $100-110 \times 35-45\mu$ , the stalk-cell  $75-115 \times 18\mu$ . Receptacle including foot  $35 \times 12\mu$ , the sterile terminal cell  $18-25 \times 7-9\mu$ . Total length to tip of perithecium  $185-220\mu$ .

On *Authicus floralis* Linn. Fresh Pond, Cambridge. On *A. Californicus* Laf. California (Leconte Collection).

#### *Dioicomycetes onchophorus* nov. sp.

*Male individual* similar to that of *D. Anthici*, slightly smaller.

*Female individual.* Usually strongly curved, especially at the base of the stalk-cell; similar to *D. Anthici*; the receptacle, sterile cell, and the stalk of the perithecium, relatively smaller. Perithecium dirty brown, one of the lip-cells protruding in the form of a well defined, lateral, finger-like, erect, straight, or slightly curved, blunt-tipped, concolorous process; an irregular anterior elevation or angular prominence is also more or less well defined above the middle of the perithecium. Spores (male)  $35 \times 4\mu$ , (female)  $45 \times 5\mu$ . Perithecia to tip of projection  $125-140 \times 40-45\mu$ , the stalk-cell  $90\mu$ . Total length to tip of perithecium  $210-230\mu$ .

Usually on the basal half or at the base of the left elytron of *Authicus floralis* Linn. Fresh Pond, Cambridge.

#### *Dioicomycetes spinigerus* nov. sp.

*Male individual* similar to that of *D. Anthici*, much smaller, the extremity less prominent, or almost horizontal, the discharge tube some-

what more slender, and more often erect. Total length including foot  $40 \times 6.5 \mu$ ; to tip of discharge-tube  $47 \mu$ .

*Female individual.* Receptacle relatively small, tinged with dirty yellowish, edged with brown to the tip of the small terminal sterile cell. Perithecium dirty yellowish and relatively large, considerably and more or less symmetrically inflated, above and including its basal cells, to the base of the tip, which is bent abruptly outward at right angles to the axis of the perithecium; the apex broad, blunt, the lip-cells hardly projecting: a unicellular brown, straight or slightly curved, spine-like process, which tapers to a blunt point, projects upward at an angle of about  $45^\circ$  from the middle of the outer (anterior) margin of the perithecium; and a slight elevation is also more or less distinct between its base and that of the tip; the stalk-cell relatively short, becoming rapidly narrower toward its base. Spores (male)  $26 \times 4 \mu$ , (female)  $40 \times 6 \mu$ . Perithecia including basal cells  $125 \times 50 \mu$ , the spinous process  $55 \mu$ , the stalk-cell  $36\text{--}40 \mu$ . Receptacle to tip of sterile cell about  $45 \mu$ . Total length to tip of perithecium about  $185 \mu$ .

On *Anthicus floralis* Linn., with the last two species, more commonly on the inferior surface of the abdomen. Fresh Pond, Cambridge.

#### *Teratomyces Zealandica* nov. sp.

Receptacle with a distinct distal obliquity, opaque with the exception of a hyaline area just above the foot, the margins straight, the distal portion relatively narrow, the base relatively broad, the suffusion involving the bases of the appendiculate cells which are relatively numerous and narrow and more or less suffused with brownish yellow. Appendages sometimes scanty, but slightly divergent, concolorous throughout, nearly hyaline or pale yellowish; the basal cells of the larger branches relatively slender, the external branchlets and numerous beak-like cells hardly more deeply colored. Perithecia relatively large, long, rather slender, slightly inflated throughout, the blunt tip more or less abruptly distinguished; the stalk-cell very short or almost obsolete, hidden by the appendages; the basal cells relatively small and not distinguished from the body of the perithecium. Spores about  $50 \times 2.5\text{--}3 \mu$ . Perithecia  $150\text{--}180 \times 20\text{--}28 \mu$ , basal and stalk-cells together about  $35 \mu$ . Longest appendage  $180 \mu$ . Receptacle  $75\text{--}125 \times 15\text{--}18$  (base)  $22\text{--}30 \mu$  (distally).

On *Quedius insolitus* Sharp. Dunedin, New Zealand. Sharp Collection, No. 1099.

*Teratomyces petiolatus* nov. sp.

Receptacle nearly symmetrical, almost wholly black, slender below, expanding rather abruptly distally; the appendiculate cells relatively large and long, translucent, brownish yellow, subtended by a slight enlargement. Appendages numerous, spreading, the larger ones consisting of a very large colorless or brownish basal cell, which bears a series of branchlets externally and several branches terminally; the branchlets usually short, and two-celled, the distal cell usually long, beak-like and clear purplish brown, the lower cell hyaline or light brown and in the lower branchlets usually bearing long-necked antheridia: the terminal branches with several short branchlets of a similar character. The smaller shorter appendages about the bases of the larger ones, mostly dark purplish brown, with many beak-like cells. Perithecia usually several, large, symmetrical, purplish brown; the tip short, rather narrow and abruptly distinguished; the basal cells relatively very large, forming a portion of the stalk sometimes half as long as the perithecium proper; the stalk-cell stout and elongate. Perithecia  $185-225 \times 45-50 \mu$ , the basal cell  $100-150 \times 10 \mu$ , the stalk-cells  $180-300 \mu$ . Receptacle about  $150 \mu$ . Appendage, longest  $175$ , longest basal cells  $110 \mu$ .

On *Quedius* sp. Greymouth, New Zealand. Sharp Collection, No. 1103.

*Teratomyces insignis* nov. sp.

Receptacle usually quite opaque, long, slender; the outline unbroken and nearly straight, tapering evenly to the slightly geniculate base, which is nearly hyaline just above the foot: the margin of the suffused area distally strongly oblique, especially before maturity; the appendiculate cells small, becoming brownish. The appendages numerous, spreading, the larger ones hyaline or nearly so, consisting of a large elongate basal cell, which bears two or three small remote antheridial branches externally; and terminally, as a rule, two large branches placed side by side (one of which may be wanting) sometimes associated with one or two sub-terminal smaller branchlets, the basal cells of which are dark contrasting brown: the terminal branches hyaline with branchlets like those of the basal cell; the branchlets, however, more numerous, contrasting, brown, simple or branched, many having characteristic beak-like terminations, while others are blunt tipped, with oblique septa. The smaller peripheral appendages more or less crowded around the bases of the larger ones, with conspicuous and numerous beak-like terminations. The antheridia with long curved necks. Perithecia usually several, brown, long and

slender, straight, very slightly inflated near the base, with a slight submedian enlargement; tapering throughout to the short, truncate, well distinguished tip: the basal cells rather small, concolorous; the group narrower than the stalk-cell and separated from it by a horizontal septum: the stalk-cell very large, usually elongate, often inflated and thick walled. Spores about  $50 \times 4 \mu$ . Perithecia including basal cells  $240-275 \times 40 \mu$ , the stalk-cell  $150-325 \times 25-35 \mu$ . Appendages, longest  $225 \mu$ . Receptacle  $100-185 \times 14$  (base)  $\times 55$  (distal end). Total length to tip of perithecium largest,  $800 \mu$ .

On abdomen of *Quedius* nov. sp. New Zealand. Sharp Collection, No. 1159.

### ACOMPSOMYCES nov. gen.

Receptacle two-celled, bearing an antheridial branch terminally and a single perithecium laterally. Antheridium consisting of several superposed cells from which single simple antheridia are borne directly. The perithecium borne on a stalk, the lumen of which becomes continuous with that of the ascigerous cavity.

### *Acompsomyces Corticariae* nov. sp. \*

Receptacle narrow below, distally enlarged, hyaline; the subbasal cell small. Basal cell of the appendage brown, distally narrowed to the base of the appendage proper, which is brown, and consists of three symmetrical cells, the upper smaller, becoming a terminal antheridium, the lower bearing several antheridia somewhat irregularly. Perithecium brown, rather abruptly distinguished from the short hyaline stalk; the tip very broad and darker; the lip-cells forming four hyaline-tipped, nearly symmetrical papillae, which terminate four corresponding ridges. Spores about  $30 \times 2 \mu$ . Perithecia  $90 \times 26 \mu$ , the stalk  $15 \mu$ . Receptacle  $25 \mu$ . Antheridial appendage, above stalk-cell, and including terminal antheridium,  $40 \mu$ .

On elytron of *Corticaria* sp. Berkeley, California.

### STICHOMYCES nov. gen.

Receptacle consisting of two cells, the upper bearing one or more stalked perithecia laterally, and an antheridial appendage terminally. The appendage consisting of several superposed cells, the lowest sterile, or having one or two opposite lateral perithecia; those above it bearing opposite lateral branchlets distally, the series ending in a terminal sterile

branch. Antheridia simple, flask-shaped, free, borne in small groups on short branchlets.

*Stichomyces Conosomae* nov. sp.

Dull amber brown. Receptacle and appendage undifferentiated, the basal cell of the former small, triangular in outline; the subbasal cell about as broad as long, and similar to the cells of the appendage, bearing distally and laterally a single perithecium, sometimes two, which are then paired on opposite sides of the cell, like the antheridial branchlets. Appendage consisting of five superposed subequal cells slightly longer than broad, the basal one sterile, or rarely (abnormally) producing one or two perithecia as in the subbasal cell below it: the three cells above slightly larger, the upper angles separated by oblique septa to form small cells on either side, which bear short one or few celled antheridial branchlets; the terminal cell somewhat smaller, bearing a simple terminal several-celled branch in addition to the lateral branchlets, all of which appear to be sterile. Antheridia with broad necks grouped in twos or threes. Perithecium darker brown, more or less symmetrically inflated; the tip hardly modified; the basal cells collectively broader and nearly as long as the stalk-cell. Spores  $35 \times 2.5 \mu$ . Perithecia  $85 \times 25 \mu$ , the stalk-cell  $36 \times 14 \mu$ . Total length to tip of the appendage proper  $150 \mu$ , the terminal branch  $150 \mu$ , the antheridial branchlets about  $20 \mu$ . Total length to tip of perithecium  $185-200 \mu$ .

On *Conosoma pubescens* Payk. Belmont and Waverly, Mass. First observed by Mr. Bullard.

*Rhachomyces Oedichiri* nov. sp.

Receptacle strongly curved, rather short, the lower cells especially more or less suffused with clear brown, the basal cell slender, the cells of the main axis above it successively larger, about ten to twelve in all. Appendage hardly ever reaching to the tip of the perithecium; the shorter margin alone subulate and straight, the rest appressed, denser toward the base of the perithecium, where they form a tuft which does not wholly surround it, curved slightly outward, somewhat attenuated; tips abruptly recurved or subhelicoid. Perithecium somewhat inflated, hyaline, with the exception of several longitudinal dark brown marks at the tip, the base concealed by the appendages. Spores  $36 \times 4 \mu$ . Perithecia  $90-110 \times 30-35 \mu$ . Total length to tip of perithecium  $220-250 \mu$ . Longest appendages about  $90 \mu$ .

On *Oedichirus* nov. sp. Rio de Janeiro, Brazil. Sharp Collection, No. 1154.

*Rhachomyces Glyptomeri* nov. sp.

Receptacle slender, dirty translucent brown, the main axis consisting of about seven cells (below the lower of the two perithecia which are present in the type): the appendages slightly divergent, large and long, opaque brown, flexed inward near their hyaline, somewhat more slender extremities, and extending beyond the tips of the perithecia. Perithecium short-stalked, strongly curved, slightly inflated, hyaline, soiled with brownish, the tips well distinguished, blackish brown and obliquely truncate. Perithecia, including basal and stalk-cells, about  $185 \times 44 \mu$ . Receptacle to base of lower perithecium  $150 \times 15 \mu$ . Appendages, longest  $360 \mu$  or more.

On tip of abdomen of *Glyptomerus cavicolus* Müll. Carniola, Austria. Sharp Collection, No. 1141.

*Rhachomyces Dolicaontis* nov. sp.

Form elongate. Cells of the main axis of the receptacle twenty to thirty-five, more or less dirty brownish, banded with dark blackish brown below, while the more slender proximal cells are usually opaque; the axis of nearly equal diameter throughout and nearly straight above about the eighth cell; each cell containing distally one, the axis cells two, roundish or oblong brown bodies (possibly thickenings of the walls) which suggest the stigmata of an insect larva. The appendages somewhat divergent, opaque, except a narrow upper hyaline margin, short, stiff and numerous; those external more slender, slightly curved and sharply pointed; those between somewhat stouter and longer, with slightly recurved tips; those about the base of the perithecium, which they do not conceal, but slightly longer and few in number. Perithecium short-stalked, slightly more or less symmetrically inflated, dull brown, minutely punctate or granular, not uniformly suffused; the tip with darker shades, the blunt apex hyaline. Spores  $66 \times 5 \mu$ . Perithecia  $150-200 \times 42-60 \mu$ , including the basal and stalk-cells. Larger appendages  $90-110 \mu$ , smaller about  $75 \mu$ . Total length  $600-1100 \mu$ , the average diameter about  $30-35 \mu$ . On all parts of *Dolicaon Lathrobioides* Casteln. Cape of Good Hope, Africa. Sharp Collection, No. 1146. Berlin Museum, Nos. 833 and 842.

*Sphaleromyces Quedionuchi* nov. sp.

Perithecium relatively small, translucent, tinged with amber brown, straight, very slightly almost symmetrically inflated; the tip hardly dis-

tinguished; one of the lip-cells forming a blunt, terminal, irregularly curved, hyaline, sometimes abruptly distinguished projection, below the base of which arises on the inner side a tongue-like outgrowth externally and basally blackish brown, the broad rounded hyaline end of which is curved against or across the base of the terminal outgrowth; the stalk-cell small, the basal cells collectively larger, and separated from it by a very oblique septum. Basal cell of the receptacle long, black, obconical, the narrow base translucent; the subbasal cell small, nearly triangular. Appendage consisting of five very obliquely superposed cells, the two lower nearly equal, the cells above successively smaller, but equal in length; the branches which are once or twice branched and extend about to the middle of the perithecium, arising from the whole surface of their inner margins, the terminal cell soon destroyed. Spores  $55 \times 3 \mu$ . Perithecia  $135 \times 36 \mu$ . Basal cell of receptacle  $120 \mu$ . Appendage without branches  $55 \mu$ . Total length to tip of perithecium  $290-310 \mu$ .

On the abdomen of *Quedionuchus impunctus* Sharp. San Andres, Vera Cruz. Sharp Collection, No. 1105.

#### *Sphaleromyces Chiriquensis* nov. sp.

Almost uniformly translucent dirty amber brown. Perithecium very large and crowded with spores, long, with a very slight general inflation, the base narrower, tapering abruptly at the short tip: one of the lip-cells forming an erect, median, straight, hyaline, cylindrical or slightly inflated, nearly truncate terminal projection, which is subtended by a posterior or partly lateral, somewhat larger, spine-like, slightly divergent, deep black brown, nearly straight or slightly outcurved pointed outgrowth, its tip nearly on a level with that of the median projection: the basal cells collectively slightly larger than the short stalk-cell, and not distinguished from the base of the perithecium. Basal cell of the receptacle very large, tapering throughout from the broad distal to the narrow basal end, paler than the small, flattened, deeper brown subbasal cell. The appendage consisting of a relatively large basal stalk-cell, which is slightly longer than broad, and partly united to the stalk-cell of the perithecium; above are four short successively smaller cells, their septa slightly oblique, the three lower bearing branches as usual, which may branch once above their basal cells, the branchlets brown, erect, rigid, closely aggregated; the uppermost cell paler, with a terminal branch. Spores  $50 \times 2 \mu$ . Perithecia  $220-250 \times 40-48 \mu$ , to tip of median projection, the subterminal process  $25 \times 7 \mu$ ; the stalk-cell  $35 \times 25 \mu$ . Receptacle  $240 \times 40 \mu$ , the basal cell  $220 \mu$ . Total length to

tip of perithecium 500–600  $\mu$ . Appendage without branches, including stalk-cell, 75  $\mu$ .

On the tip of the abdomen of *Quedius flavicaudus* Sharp. Volcan de Chiriqui, Panama. Sharp Collection, No. 1157.

*Sphaleromyces Indicus* nov. sp.

Perithecium relatively very long and large, yellowish, very slightly inflated toward the base, tapering very gradually to the broad, blunt tip which is subtended by a truncate, conical lateral projection; the stalk-cell relatively short. Receptacle relatively small, the two cells nearly equal, the upper bearing the stalk-cell of the perithecium terminally and the basal cell of the appendage laterally; the latter overlapping it to its base. Appendage consisting of four superposed cells, the basal (stalk-cell) small, triangular; the two cells above it larger and longer, bearing short antheridial branches from the upper inner angles; the terminal cell smaller, subconical, bearing a small terminal branchlet. Spores about  $44 \times 4 \mu$ . Perithecium  $290\text{--}340 \times 45 \mu$ , the stalk-cell 72  $\mu$ . Receptacle 55  $\mu$ . The appendage 125  $\mu$ .

On the upper surface of the tip of the abdomen of *Pinophilus* (near "*P. rufipennis*"). Malabar, India. Sharp Collection, No. 1151.

*Corethromyces Latonae* nov. sp.

Perithecium reddish brown with a purplish tinge, often straight, or externally concave, slightly inflated; the lip-cells forming a small short, slightly bent, nearly cylindrical, truncate, or papillate terminal projection, which is rather abruptly distinguished; the secondary stalk-cell, and the basal cell above it, bulging outward more or less prominently, and separated by a rather conspicuous irregular indentation: the stalk-cell small and squarish. The basal cell of the receptacle asymmetrical; its anterior margin straight and perpendicular, the posterior slightly curved and oblique; its distal margin oblique with a posterior protrusion; its slender base translucent, but otherwise opaque, the opacity involving a portion of the small flattened subtriangular subbasal cell. The appendage consisting of a series of about five successively smaller hyaline cells, the lowest greatly flattened; the series above, the distal cells of which soon disappear, often turned outward so as to become almost horizontal in position, giving rise from their inner sides to numerous hyaline branches, which may be more or less copiously branched. Spores about  $35 \times 2 \mu$ . Perithecium  $90\text{--}105 \times 20\text{--}25 \mu$ , the stalk and basal cells together 20–

25  $\mu$ . Receptacle  $110 \times 50$  (distal end)  $\times 10 \mu$  (base). Total length to tip of perithecium 225–250  $\mu$ .

On the legs and abdomen of *Latona Spinolae* Guér. Bogota, Columbia. Berlin Museum, No. 834.

### *Corethromyces Stilici* nov. sp.

Perithecium amber colored, with a faint brownish or reddish tinge, somewhat irregular in outline through a spiral twist in the wall-cells, which are distinguished from one another by slight furrows; slightly inflated toward the base, tapering to the broad blunt apex; the tip not at all distinguished; the basal and stalk-cells well developed, hyaline, the latter bent abruptly upward from its insertion. Basal cell of the receptacle small, hyaline on the anterior side just above the foot, but otherwise blackish brown or opaque, bulging posteriorly above the foot; distally and posteriorly proliferous to form a straight, black, blunt finger-like outgrowth, which lies external to the appendage; the subbasal cell nearly hyaline, subtriangular, separated from the basal cell by a very oblique septum. Appendage hyaline, consisting of a nearly free and nearly isodiametric stalk-cell, above which are three or four cells which produce a close tuft of hyaline branches on the inner side. Spores about  $30 \times 3 \mu$ . Perithecia  $80\text{--}85 \times 22 \mu$ , its stalk-cell  $30 \times 18 \mu$ . Receptacle 25  $\mu$ , the outgrowth  $55 \times 7 \mu$ . Appendage, including branches, 50  $\mu$ . Total length to tip of perithecium 150  $\mu$ .

On the abdomen of *Stilicus* sp., Interlaken, Switzerland. On *Stilicus rufipes* Germ., Berlin Museum, No. 836. Europe.

### *Ceratomyces spinigerus* nov. sp.

Bright amber brown. Perithecium paler anteriorly, about twenty-eight wall-cells in each row; narrower at the base, the lower half bulging anteriorly, tapering distally where it is rather strongly curved away from the antheridial appendage: the tip hyaline, prominent, obtuse, about half as long as the curved tooth- or spine-like one-celled deep amber brown appendage, which arises below and beside it. Basal cell of the receptacle large, long, mostly curved, broader distally, opaque; the portion above it relatively small and narrow, concolorous with the perithecium. The appendage erect, slightly divergent, stiff, long, slender, rather remotely septate, but the basal cell often broader than long, about seven-celled, tapering distally. Spores  $90 \times 4 \mu$ , in one small specimen  $165 \times 4.5 \mu$ . Perithecia  $425\text{--}500 \times 70\text{--}95 \mu$ , the appendage 45–50  $\mu$ .

Receptacle 175–220  $\mu$ , the basal cell 150–170  $\mu$ . Antheridial appendage 200–325  $\mu$ .

On the inferior anterior margin of the thorax near the base of the right elytron of *Tropisternus apicipalpis* Cast. Jalapa, Mexico. Sharp Collection, No. 1178.

*Ceratomyces procerus* nov. sp.

Rather pale amber brown. Perithecium very elongate, of nearly equal diameter throughout, the wall-cells in each row more than sixty in number; the conformation at the tip similar to that in *C. confusus*; the perithecial appendage erect, short and stout, consisting of about ten cells, distally curved outward, tapering from its broad base to the bluntly pointed tip. Appendages (broken) and receptacle much as in *C. confusus*. Perithecium 800–850  $\times$  65  $\mu$ , its appendage 125  $\mu$ . Total length to tip of perithecium more than one millimeter.

On the inferior surface of the abdomen (near the middle) of *Tropisternus* sp. San Fidelio, Brazil. Museum of Comparative Zoölogy, Cambridge, No. 1338.

*Ceratomyces curvatus* nov. sp.

Amber brown. Perithecium relatively large, inflated toward the base; the distal half up to the perithecial appendage of about equal diameter throughout; about forty cells, more or less, in each row of wall-cells; the configuration at the tip very similar to that in *C. confusus*, the tip itself more prominent, the apex more pointed; the perithecial appendage about nine-celled, the distal half pale, curved or recurved, broader below, shorter and stouter. Receptacle much as in *C. confusus*, the basal cell black, the further suffusion somewhat less extensive. Appendage consisting of about six or seven cells, tapering distally, rather short. Spores about 70  $\times$  4  $\mu$ . Perithecia 500–615  $\times$  75  $\mu$  (below)  $\times$  60  $\mu$  (distally), the appendage 150  $\mu$ . Total length to tip of perithecium 600–700  $\mu$ , to tip of antheridial appendage about 250  $\mu$ .

On *Tropisternus Caracinus* N. on inferior surface of abdomen near the tip. Caracas? Berlin Museum, No. 1057.

*Ceratomyces Mexicanus* nov. sp.

Dark amber brown. Perithecium with a slight submedian inflation; distally broad, the outer margin turning abruptly inward distally to the inconspicuous retracted tip, which lies close at the base of the perithecial appendage, and is externally subtended by irregular inconspicuous papil-

late protrusions: the basal cell of the appendage slightly divergent, several times as long as broad; the external margin straight, the inner strongly concave with a median blackish suffusion; the rest of the appendage slightly curved, about eight or nine-celled, tapering slightly and diverging strongly above the basal cell. The antheridial appendage and the receptacle much as in *C. mirabilis*. Spores  $85 \times 5 \mu$ . Perithecia  $400-475 \times 110-125 \mu$ , the appendage about  $290 \mu$ , its basal cell  $70 \times 26$  and  $36 \mu$ . Total length to tip of perithecium  $550-640 \mu$ .

On the left inferior margin of the abdomen of *Tropisternus nitidus* Sharp, Sharp Collection, No. 1177, and of *T. chalybeus* Cast., British Museum, No. 772, Oaxaca, Mexico.

#### *Ceratomyces Braziliensis* nov. sp.

Dark amber brown. Perithecium somewhat inflated just above the constricted base, the upper two-thirds broad and of about the same diameter throughout; about forty-five wall-cells in each row, the tip small, short, rather narrow, abruptly hunched externally, the hyaline lips turned abruptly toward the base of the perithecial appendage, which consists of a basal cell hardly differentiated from the wall-cell below it, though somewhat longer, the portion above it erect, slender, stiff, slightly curved outward, tapering but little, the subbasal cell bearing a characteristic basal enlargement which projects toward the lip-cells and lies just above them. The appendage and receptacle much as in *C. mirabilis*. Perithecium  $650 \times 95 \mu$  (basal)  $\times 87 \mu$  (distal). Appendage  $185 \mu$ , or more. Total length to tip of perithecium  $800 \mu$ .

On inferior thorax of *Tropisternus nitens* Cast. var. Rio de Janeiro. Sharp Collection, No. 1181.

#### KAINOMYCES nov. gen.

Receptacle much as in *Zodionomyces*, broad and flattened; consisting of a single basal cell and typical foot, above which the successive cells become variably divided by longitudinal septa into transverse cell-rows or tiers: the distal portion more or less definitely distinguished and consisting of superposed cells, the lowest of which alone become longitudinally divided, all producing laterally antheridial (?) branches: several of the tiers immediately below this appendiculate portion growing out laterally at right angles to the main axis of the receptacle on one or both sides to form "perithecial branches" consisting of superposed cells and terminated by solitary perithecia. The perithecium of peculiar

form, with six wall-cells in each row in addition to the lip-cells; the base of the trichogyne persistent in the form of a peculiarly modified unicellular appendage.

It has proved impossible from an examination of the available material of this extraordinary form, to determine the character of the antheridia; yet there can hardly be any doubt as to its true position among the "Exogenae" near *Zodionomyces*, *Euzodionomyces*, and *Ceratomyces*, its distal appendiculate portion being evidently homologous with the "appendage" of the last-mentioned genus.

### *Kainomyces Isomali* nov. sp.

Receptacle variably developed below the distal appendiculate portion, sometimes very broad, often much narrower: the cells above the basal cell becoming broader and flattened, and soon divided longitudinally by one or more septa, nearly hyaline and broadly edged wholly or in part below, especially on the posterior side, with contrasting brownish black, which may involve the whole of the cell, except the transverse septa; the blackened area usually characteristically indented above, and sometimes involving all but the uppermost tiers. Perithecial branches variably developed, the free portion curving upward, and consisting of from about twelve to thirty-five superposed hyaline cells, which are more or less flattened, usually separated by slight constrictions, the distal one similar to the others and followed directly by the basal cells of the perithecium. Perithecium becoming tinged with pale amber brown, usually short, stout and subobloug, often not distinguished from its basal cells; the distal end abruptly rounded, the pore subtended by a tooth-like outgrowth, half as long as and paler than the trichogynic appendage, which bears a slight resemblance to a duck's bill, is dark clear brown, somewhat narrower distally and pale tipped, broader toward the base, where it is abruptly constricted and hyaline. Spores about  $30 \times 3.5 \mu$ . Perithecia  $72-80 \times 40-50 \mu$  exclusive of trichogynic appendage, which measures  $28-32 \times 11 \mu$ . Perithecial branch  $100-253 \mu$ . Receptacle  $150-220 \times 40-60 \mu$ . Antheridial branches about  $50 \mu$ . Total length to tip of perithecium  $250-460 \mu$ .

On *Isomalus Conradti* Fauvel. Derema, Usambara, East Africa. Berlin Museum, Nos. 847-848.